



Boost your joint health formula



Booster naturel pour le confort articulaire

Osteol™ est un ingrédient naturel capable de booster l'efficacité des formulations articulaires standards (D-Glucosamine+Chondroïtine). Des études in vitro et clinique ont confirmé son activité ciblée pour le confort articulaire.

- Ingrédient naturel issu de protéines bioactives de lait
- Renforce l'activité des formules articulaires classiques
- Dossier scientifique (études in vitro, in vivo et clinique)
- Facile à utiliser dans les compléments alimentaires
- Facile à utiliser dans les aliments fonctionnels



Efficacité renforcée des formules articulaires

Les travaux de recherche menés par Nexira ont permis de mettre en évidence les différents atouts d'Osteol™ dans une formule articulaire:

- Réduction des marqueurs de l'inflammation
- Protection du cartilage
- Réduction des dosages d'actifs nécessaires pour une efficacité maintenue voire renforcée.

Confort articulaire

Dans les pays développés, les Seniors sont de plus en plus à la recherche de solutions naturelles pour préserver leur bien-être et ralentir les effets du vieillissement. Le confort articulaire est une de leurs préoccupations. Le marché du confort articulaire est d'ailleurs bien développé et 2 ingrédients sont déjà largement utilisés : la D-glucosamine en association avec la chondroïtine. La division HEALTH de Nexira a choisi de renforcer l'efficacité de ces 2 ingrédients en développant:

- Osteol™: Booster naturel du confort articulaire issu de protéines de lait bioactives.

Nous vous invitons à découvrir l'étendue de notre gamme d'extraits botaniques standardisés et nos spécialités



In a healthy joint cartilage, everything is perfectly self-regulated :

- **Survival of chondrocytes**
- **Balance between synthesis/destruction of the matrix**
- **Architecture of the matrix**



As the cartilage wears down, because of aging and more or less frequent physical use, the joint structure is progressively degenerating, which could cause pain and stiffness.
Cartilage degeneration could be attributed to :

- > modification of chondrocytes physiology
- > reduction in the effectiveness of matrix renewal,
- > stimulation of the matrix degradation enzymes

HEALTHY JOINT

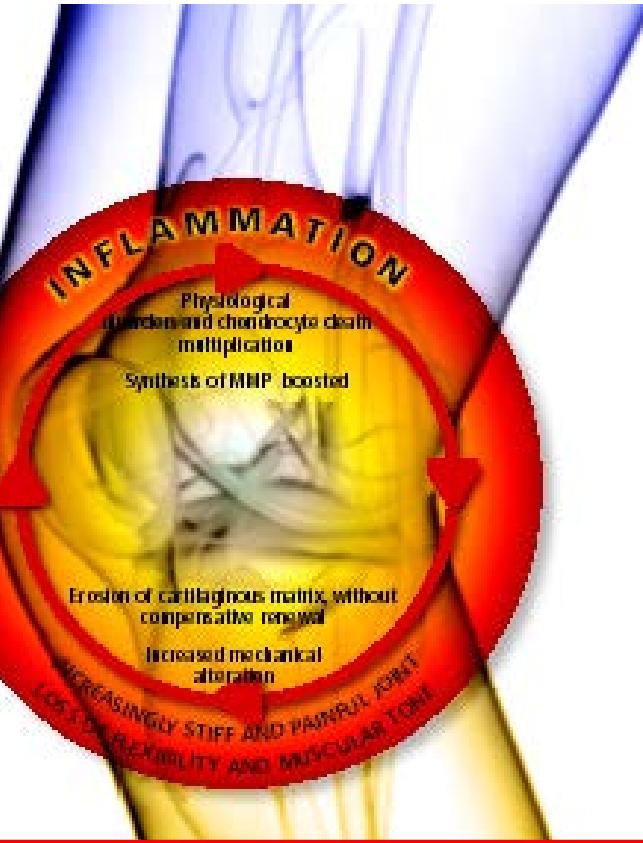
Normal functioning of
CHONDROCYTES
(cartilage cells)

Renewal of the Cartilage & Elimination of
defective structural proteins
Thanks to the controlled action of Collagenases
(MMP)

Regulated synthesis of structural proteins
of the cartilage matrix
Collagen + Proteoglycans

**Self-regulation of cartilage,
Preservation of joint flexibility**

PAINFUL JOINT



**Increasing stiff and painful joint
Loss of flexibility and muscular tone**



An innovative ingredient



- Innovative, **scientifically**-supported ingredient.
- Developed by Nexira from **bio-active milk proteins**.
- **Improve the efficiency of usual Glucosamine + Chondroitin mix**
& consequently go further in joint health and cartilage preservation.

Osteol™ :
Joint Health Booster

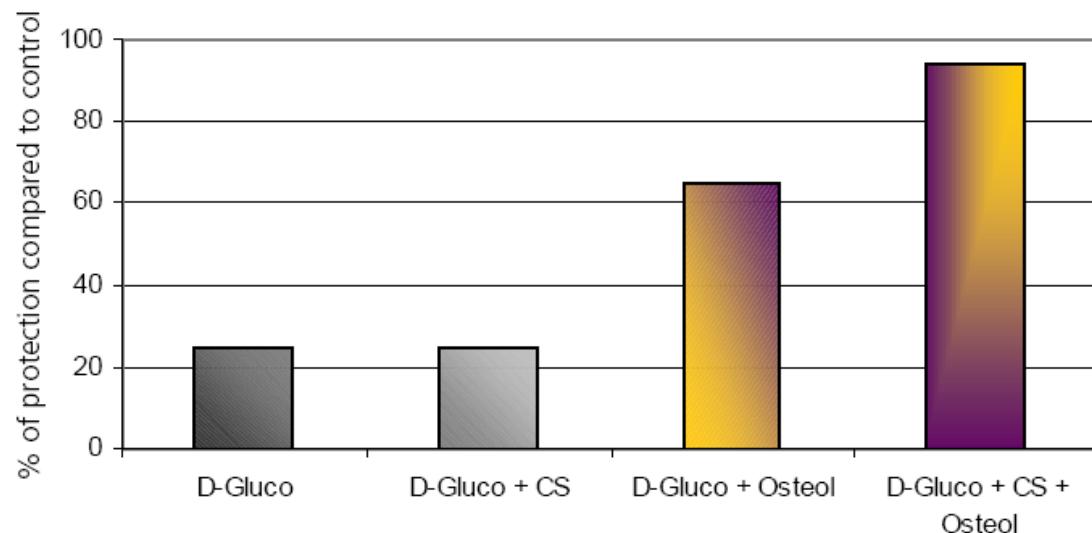


Scientific works showed that Osteol™ :

- **Improves chondrocytes protection**
- **Increases anti-inflammatory effects**
- **Inhibits MMPs**
- **Allows lower dosage and better efficacy**

1- Preservation of Chondrocytes

In vitro test : Evaluation of the effect of Osteol on chondrocytes™ preservation when stressed by inflammatory markers :



Test conditions :

(Chondrocytes + cytokines)	Concentration of tested formulas
+ D-Gluc	0.01µg/ml
+ D-Gluc + CS	1.01 µg/ml
+ D-Gluc + Osteo ™	0.02 µg/ml
+ D-Gluc + CS + Osteo ™	1.02µg/ml



Chondrocytes preservation

Thanks to Osteol™, near than 95% of stressed chondrocytes are preserved from apoptose, against 25% obtained with the mix (D-Glucosamine + Chondroitin), at the same concentration (1,01µg/ml).

> Adding Osteol™ to your regular D-Glucosamine + Chondroitin mix allows to increase from 25% to 95% the protective effect.



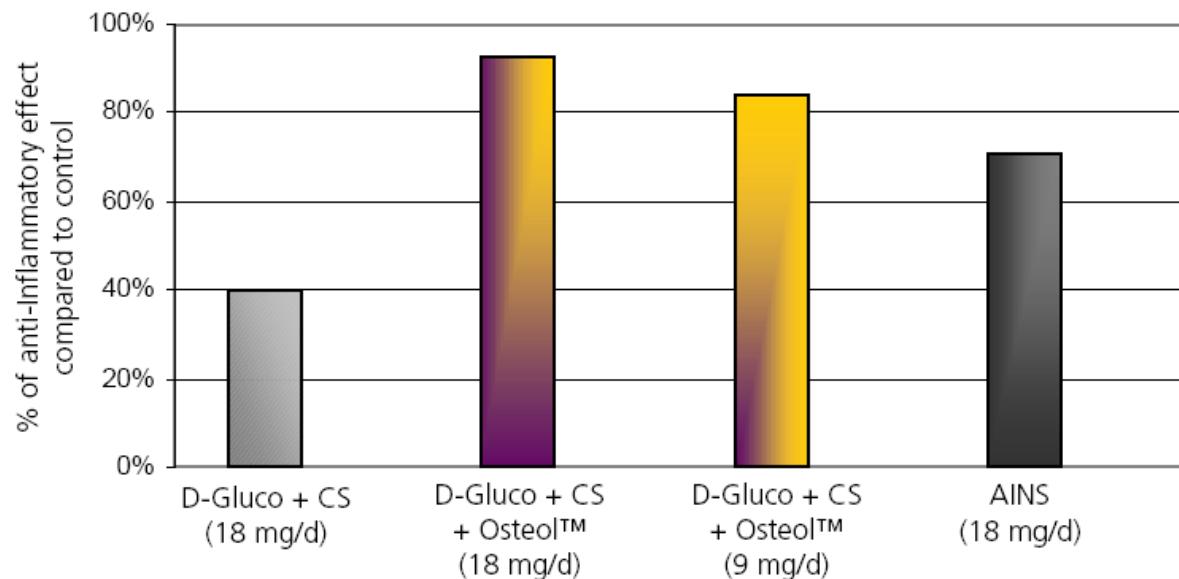
Chondrocytes preservation

These results, confirmed by others tests conducted on the same model, highlight the exceptional property of Osteol™ as a formula booster.

> The protective effect obtained with the combination of Osteol™ with D-Glucosamine + Chondroitin is better than the addition of the 3 preservation effects of the ingredients individually (at the same concentration (1.01µg/ml).

2- Anti-inflammatory effect

In vivo test on rats : evaluation of the anti-inflammatory effect of Osteol™ combined with D-Glucosamine & Chondroitin :



Test conditions :
inflammatory marker controlled
= TNF-alpha, Tumor Necrosis Factor.

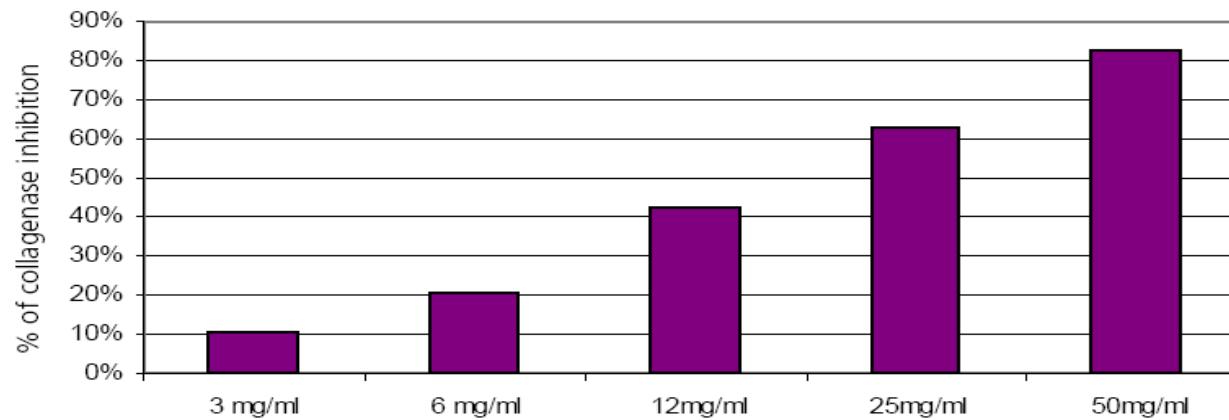
	Level of TNF- α (pg/ml)
Control	752 ± 55
D-Gluco + CS (18 mg/d)	450 ± 65
D-Gluco + CS + Osteol™ (18 mg/d)	55 ± 8
D-Gluco + CS + Osteol™ (9 mg/d)	124 ± 17
AINS (18 mg/d)	220 ± 23

- > **Combined with D-Gluc. & Chondroitin, Osteol™ offers a powerful booster effect to reduce inflammatory markers & their harmful consequences.**

3- Inhibition of MMPs

Under inflammatory stress, synthesis and activity of the matrix degeneration enzymes are increased, resulting in accelerated degeneration of the cartilage matrix. These enzymes are called metalloproteases (MMPs), and one of them was particularly studied : the collagenase.

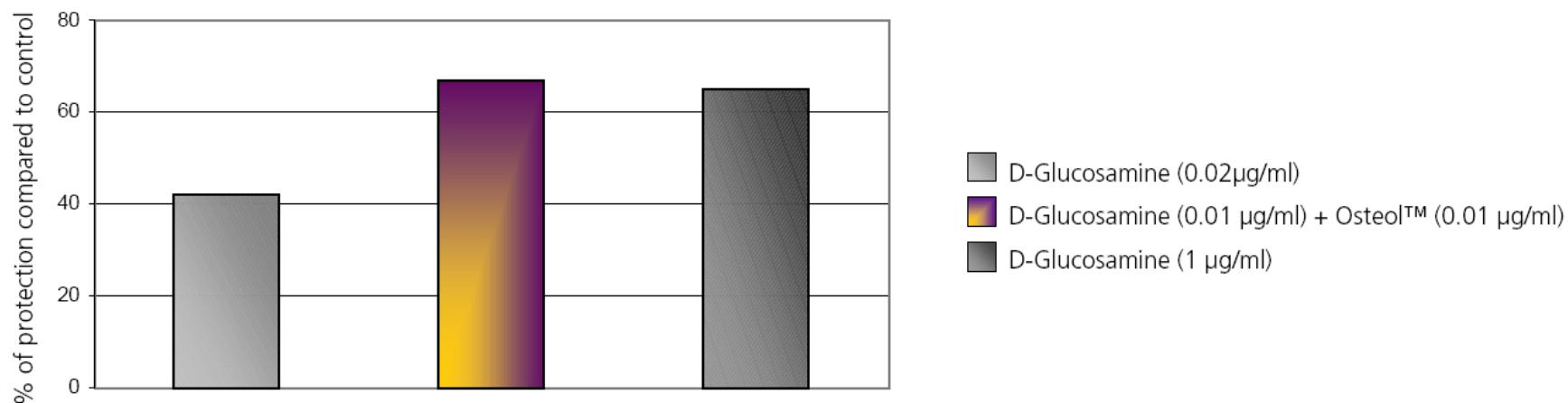
*In vitro test : Inhibition of the collagen degradation thanks to Osteo/™,
at different concentrations*



- > By inhibiting degradation enzymes (MMPs), Osteo/™ could reduce cartilage degeneration and relieve joint discomfort.

4- Reduction of active dosage

In vitro study : Impact of Osteol™ on D-Glucosamine dosage, in relation with the protection o stressed chondrocytes



- > **Osteol™ allows to greatly reduce the concentration of D-Glucosamine for the same preservation effect on chondrocytes**
- > **Osteol™ = the solution to boost efficiency of your joint health formula by reducing active dosage .**

Osteol™ is a fine, homogeneous powder.
It can be incorporated into any kind of dietary supplements
for **joint health**, such as **tablets** or **capsules**.



Scientific works showed that the synergic effect of Osteol™ combined with standard joint health formula (D-Glucosamine + Chondroitin) is correlated to the ratio [Osteol™] / [D-Glucosamine].

> The recommended ratio
[Osteol™] / [DGlcosamine] =
from 0.8 to 1.2.



- An innovation in joint health
- A powerful inhibitor of MMPs
- A natural ingredient available in granulated form
- A tested ingredient to improve chondrocytes protection
- A boosted anti-inflammatory activity thanks to synergistic effect with standard formula
- A lower dosage with better efficacy thanks to Osteol™



Patented formula

With the help of the results obtained for Osteol™, Bio Serae **developed and patented a ternary formulation** according to the specific effective ratios highlighted in the studies, combining :

Osteol™ +D-Glucosamine + Chondroitin

Salto3™

1. Reduction of inflammatory markers
2. Inhibition of MMPs
3. Regulation of the balance between MMPs and their natural inhibitor (TIMP)